

Listing of all claims:

1           1.   (Previously Amended)       An apparatus for  
2   detecting a seal on a moving film, comprising;  
3           a force transmitter, disposed to transmit a force  
4   from the film, wherein the force is created when the film  
5   moves with respect to the force transmitter;  
6           a force sensor disposed to receive the transmitted  
7   force and provide a force signal in response thereto; and  
8           a controller, disposed to receive the force signal  
9   and provide a seal signal in response thereto.

1           2.   The apparatus of claim 1, wherein the force sensor  
2   is an acoustic sensor.

1           3.   The apparatus of claim 1, wherein the force sensor  
2   is a mechanical sensor.

1           4.   The apparatus of claim 1, wherein the force sensor  
2   is a vibration sensor.

1           5.   The apparatus of claim 1, further comprising an  
2   anvil disposed on a first side of a film path, wherein the force  
3   transmitter is disposed on a second side of the film path.

1           6.   The apparatus of claim 1, wherein the force sensor  
2   is a piezoelectric sensor.

1           7.   The apparatus of claim 5, wherein the force  
2   transmitter is a quill disposed near a path of the film.

1           8.   The apparatus of claim 6, wherein the quill is  
2   rigid.

1           9. The apparatus of claim 7, wherein the quill is  
2 comprised of stainless steel.

1           10. The apparatus of claim 6, wherein the quill is  
2 angled in a downstream film path direction, relative to normal to  
3 the film path.

1           11. The apparatus of claim 10, wherein the quill  
2 includes a radius surface abutting the film path, and the quill  
3 is held against the film path by a spring force.

1           12. The apparatus of claim 5, wherein the controller  
2 includes an amplitude comparator that receives the force signal  
3 and an amplitude threshold.

1           13. The apparatus of claim 5, wherein the controller  
2 includes a rise-time comparator that receives the force signal  
3 and a rise-time threshold.

1           14. The apparatus of claim 1, wherein the controller  
2 includes a window circuit.

1           15. (Previously Amended)       A method for detecting a  
2 seal on a moving film, comprising;  
3               creating a force when the film moves relative to a  
4 sensor;  
5               providing a force signal responsive to the seal;  
6 and  
7               detecting the force and providing a seal signal in  
8 response thereto.

1           16. The method of claim 15, further comprising  
2           transmitting a force from the film.

1           17. The method of claim 15, wherein providing the  
2           force signal includes detecting an acoustic signal.

1           18. The method of claim 16, wherein providing the  
2           force signal includes detecting a mechanical signal.

1           19. The method of claim 16, wherein providing a force  
2           signal includes sensing a vibration.

1           20. The method of claim 15, further comprising  
2           transmitting the force with a quill disposed near a path of the  
3           film.

1           21. The method of claim 15, wherein providing a seal  
2           signal includes comparing an amplitude of the force with a  
3           threshold.

1           22. The method of claim 21, wherein providing a seal  
2           signal includes making the comparison during a window.

1           23. The method of claim 22, wherein providing a seal  
2           signal includes comparing a rise-time of the force with a  
3           threshold.

1           24. (Previously Amended)           An apparatus for  
2           detecting a seal on a moving film, comprising;  
3                       means for providing a force signal in response to  
4           the seal and a force, wherein the force is created when the  
5           film moves;

6 means for detecting the force signal, coupled to  
7 the means for providing a force signal; and  
8 means for providing a seal signal in response to  
9 the force signal, coupled to the means for detecting.

1 25. The apparatus of claim 24, further comprising  
2 means for transmitting a force from the film to the means for  
3 detecting, coupled to the means for detecting.

1 26. The apparatus of claim 25, wherein the means for  
2 detecting includes means for detecting an acoustic signal.

1 27. The apparatus of claim 25, wherein the means for  
2 detecting includes means for detecting a mechanical signal.

1 28. The apparatus of claim 25, wherein the means for  
2 detecting includes means for detecting a vibration signal.

1 29. The apparatus of claim 25, wherein the means for  
2 providing a seal signal includes means for comparing an amplitude  
3 of the force with a threshold.

1 30. The apparatus of claim 29, wherein the means for  
2 providing a seal signal includes means for making the comparison  
3 during a window.

1 31. The apparatus of claim 30, wherein the means for  
2 providing a seal signal includes means for comparing a rise-time  
3 of the force with a threshold.

1 32. (Previously Amended) A machine, comprising;

2 a force transmitter, disposed to transmit a force  
3 responsive to a seal on a bag, wherein the force is created  
4 as the bag moves relative to the transmitter;  
5 a force sensor disposed to receive the transmitted  
6 force and provide a force signal in response thereto;  
7 at least one upstream processing device, located  
8 upstream of the force transmitter;  
9 at least one downstream processing device, located  
10 downstream of the force transmitter; and  
11 a controller, disposed to receive the force signal  
12 and provide a seal signal in response thereto.

1 33. The apparatus of claim 32, wherein the force  
2 sensor is a mechanical sensor.

1 34. The apparatus of claim 32, further comprising an  
2 anvil disposed on a first side of a film path, wherein the force  
3 transmitter is disposed on a second side of the film path.

1 35. The apparatus of claim 34, wherein the force  
2 sensor is a piezoelectric sensor.

1 36. The apparatus of claim 35, wherein the force  
2 transmitter is a quill disposed near a path of the film.

1 37. The apparatus of claim 36, wherein the quill is  
2 angled downstream.

1 38. The apparatus of claim 37, wherein the quill  
2 includes a radius surface abutting the film path, and the quill  
3 is held against the film path by a spring force.

1                   39. The apparatus of claim 38, wherein the controller  
2 includes a window circuit.

1                   40. The apparatus of claim 32, wherein one of the at  
2 least one downstream devices is registered to the seal.

1                   41. The apparatus of claim 40, wherein one of the at  
2 least one downstream devices includes a knife.

1                   42. The apparatus of claim 40, wherein one of the at  
2 least one downstream devices and the force transmitter are in a  
3 common tension zone.

1                   43. (Previously Amended)           A method for processing  
2 a bag, comprising;  
3                   transporting the film from a first processing  
4 device to a seal sensing location, and past the seal sensing  
5 location;  
6                   providing a force signal responsive to the seal  
7 and a force at the seal sensing location, wherein the force  
8 is created by the seal moving;  
9                   detecting the force and providing a seal signal in  
10 response thereto;  
11                   transporting the film to a second processing  
12 device.

1                   44. The method of claim 43, further comprising  
2 transmitting a force from the film.

1                   45. The method of claim 44, wherein providing the  
2 force signal includes detecting a mechanical signal.

1                   46. The method of claim 43, wherein providing a seal  
2     signal includes comparing an amplitude of the force with a  
3     threshold.

1                   47. The method of claim 46, wherein providing a seal  
2     signal includes making the comparison during a window.

1                   48. The method of claim 43, wherein providing a seal  
2     signal includes comparing a rise-time of the force with a  
3     threshold.